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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/985,753	11/06/2001	Atsushi Kawamura	215868US2	4334

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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

PHAM, HAI CHI

ART UNIT PAPER NUMBER

2861

DATE MAILED: 10/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/985,753

Applicant(s)

KAWAMURA, ATSUSHI

Examiner

Hai C. Pham

Art Unit

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-8,10 and 12-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-8,10 and 12-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 4 and 5 are objected to because of the following informalities:

Claim 4:

- Claim 4 should claim dependency from claim 1 since claim 3 has been cancelled.

Claim 5:

- Claim 5 should claim dependency from claim 1 since claim 3 has been cancelled.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 4-8, 10, 12 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Genovese (U.S. 6,157,400) in view of Endou et al. (U.S. 5,128,795) and Kawabata (U.S. 5,148,304).

Genovese discloses an optical scanning apparatus comprising a light source (e.g., laser light source 8, Fig. 2) emitting a light beam (10) based on a pixel clock, an optical writing unit (controller 82) controlling ON/OFF state of the light source in accordance with an image signal, a frequency dividing unit (dual modulus

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programmable frequency divider 104), connected to the optical writing unit, generating a secondary frequency of the pixel clock at an output thereof, which is equal to an initial frequency of the pixel clock at an input thereof divided by a divisor integer (the dual modulus prescaler 104 having a division modulus of either 20 or 21), and an electrical correction unit adjusting the secondary frequency of the pixel clock at the output of the frequency dividing unit with respect to each of respective pixels included in the image signal, when the beam spot is located near the outer peripheral end of the image surface, so as to obtain uniform-velocity characteristics (the control circuit 82 setting the frequency dividing ratio of the frequency divider 104 with the interaction of the state machine 106 so as to correct for the non-linearity of the scanning lines in which the pixels would be further apart at the edges of the photoreceptor and closer together towards the center) (col. 2, lines 1-27) (col. 6, lines 50-65).

Genovese fails to teach the scanning optical system satisfying the following conditions $0.5\% \leq |L_{in}| \leq 10\%$ (claims 1, 6-8, 16-17), $|L_m/L_e| > 1.0$ (claims 8, 16, 17), $0.5\% \leq |L_m| \leq 10\%$ (claim 9), $L_m > 0$ and $|L_e| \leq 5\%$ (claim 10).

Endou et al. discloses an optical scanning apparatus including a scanning lens (5) formed into a high-order aspherical shape (col. 6, lines 1-5) so as to maintain the linearity at less than 10% (e.g. at the maximum amount of linearity being maintained at 7.7% max as shown in Example I), and thus the above-mentioned conditions, e.g., $0.5\% \leq |L_{in}| \leq 10\%$, $|L_m/L_e| > 1.0$ and $L_m > 0$ are inherently derived.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the post-deflection scanning lenses in the

device of Shimada et al. with the proper amount of linearity as taught by Endou et al. The motivation for doing so would have been to prevent any further deviation from the uniform scanning speed as suggested by Endou et al.

Genovese also fails to teach the scanning lens device having concentric lens surfaces whose number is equal or larger than the number of non-concentric lens surfaces in the scanning lens device.

Kawabata discloses an image forming apparatus including a set of scanning lenses (2 and 10) for scanning the deflected light beam on the surface to be scanned in the main scanning direction, wherein the second scanning lens (10) has both surfaces (10a and 10b) are constructed in a concentric configuration so as to correct the curvature of field, wherein the number of the concentric lens surfaces in the scanning lens set is equal to the number of non-concentric lens surfaces in the scanning lens set (col. 6, lines 21-24).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the post-deflection scanning lenses in the device of Genovese as taught by Kawabata. The motivation for doing so would have been to correct the curvature of field.

4. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Genovese in view of Endou et al. and Kawabata, as applied to claim 8 above, and further in view of Ono (U.S. 5,715,079).

Genovese, as modified, discloses all the basic limitations of the claimed invention except for the variation of the radius curvature and the refractive power of the scanning lens around the inflection point.

Ono discloses a scanning optical system including a scanning lens system (SL) having a second lens unit with aspherical surfaces configured with the radius curvature and the refractive power varying around the inflection point (Fig. 6) so as to keep the scanning speed of the scanning lenses uniform as well as to keep the distortion below 10% (Figs. 11C-15C).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the scanning lens with aspherical surface with varying radius curvature and lens power in the device of Genovese as taught by Ono. The motivation for doing so would have been to keep the scanning speed of the scanning lenses uniform as suggested by Ono.

Response to Arguments

5. Applicant's arguments with respect to claims 1, 4-8, 10 and 12-17 have been considered but are moot in view of the new grounds of rejection as presented in this Office action.

Pertinent Prior Art

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Swanberg (U.S. 5,175,636) discloses a scanner with a linearized pixel clock for correcting the pixel position distortion due to the scanner non-linearity.

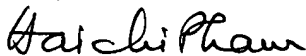
Chung (U.S. 5,333,067) discloses an optical scanning device provided with a variable frequency pixel clock for uniformly positioning the pixels across the main scanning line.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C. Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on (571) 272-1934. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



HAI PHAM
PRIMARY EXAMINER
October 20, 2005